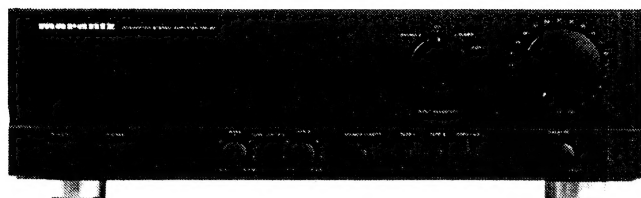


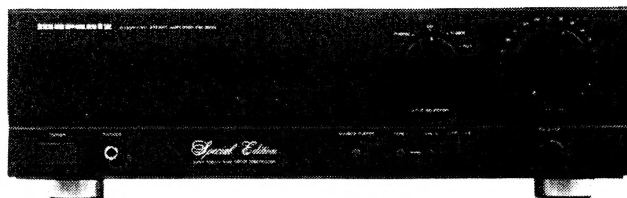
# Service Manual

74 PM30/01B/02B/05B/07B  
10B/12B/15B/17B

Stereo amplifier



PM-30



PM-30SE

## TABLE OF CONTENTS

Section	Page
1. BLOCK DIAGRAM .....	2
2. SCHEMATIC DIAGRAM AND PARTS LOCATIONS (Pattern Side) .....	3
3. EXPLODED VIEW AND PARTS LIST .....	13
4. IDLING CURRENT ADJUSTMENT .....	14
5. HOW TO CHANGE THE SUPPLY VOLTAGE 01B/02B/05B/07B .....	14
6. TEST EQUIPMENT REQUIRED FOR SERVICING .....	15
7. VOLTAGE CONVERSION .....	15
8. ELECTRICAL PARTS LIST .....	16

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# marantz®

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## model PM-30/PM-30SE

First issue: 1990

4822 725 50912

## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.

Only original MARANTZ parts can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

### ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

### PARTS ORDERING

Parts may be ordered at the following addresses:

**AUSTRIA**  
HORNYPHON  
Vertriebsgesellschaft GmbH  
Wienerbergstrasse 1  
A 1101 Wien  
Austria  
Telex: 132.332

**BELGIUM**  
SVD DIVISION MARANTZ  
Industrialaan 1  
1720 Groot-Bijgaarden  
Belgium  
Telex: 24466

**CHILE**  
MARANTZ  
DIVISION OF PHILIPS S.A.  
AV. Santa Maria, 0760  
Casilla 2687  
Santiago  
Telex: 240.235

**DENMARK**  
MARANTZ  
DIVISION OF PHILIPS  
SERVICE A/S  
Prags Boulevard 80  
Postbox 1919  
DK-2300 København S  
Denmark  
Telex: 31201

**FINLAND**  
MARANTZ  
DIVISION OF OY PHILIPS AB  
Kaivokatu 8  
00100 Helsinki  
Finland  
Telex: 124811

**FRANCE**  
MARANTZ FRANCE  
4 Rue Bernard Palissy  
92600 Asnières  
France  
Telex: 611651

**GERMANY**  
MARANTZ GERMANY GmbH  
Alexanderstrasse 1  
2000 Hamburg  
Germany

**THE NETHERLANDS**  
Elpro Marantz  
Wint Houtlaan 28  
3526 KV Utrecht  
The Netherlands  
Telex: 4748

**NORWAY**  
MARANTZ  
DIVISION OF PHILIPS A/S  
Sandstuveien 40  
0680 Oslo 6  
Norway  
Telex: 72640

**GREAT BRITAIN**  
MARANTZ AUDIO U.K. Ltd  
Unit 15/16  
Saxon Way Industrial Estate  
Moor Lane  
Harmondsworth UB7 0LW  
Great Britain  
Telex: 935196

**GREECE**  
SHERTON ELECTRONICS S.A.  
P.O.Box 21025  
Hippocratus Street 188  
Athens 11471  
Greece  
Telex: 216.795

**JAPAN**  
MARANTZ JAPAN, Inc.  
35-1, 7-chome, Sagamiono  
Sagamihara-shi, Kanagawa  
Japan

**KUWAIT**  
AL ALAMIAH ELECTRONICS  
Ussama Building  
Fahd al Saleem Street  
P.O.Box 23781  
Safat-Kuwait  
Telex: 22694

**ITALY**  
MARANTZ ITALIANA S.P.A.  
Via Chiase, 74  
20126 Milano  
Italy

**MARANTZ INTERNATIONAL**  
Vestdijk 9  
5600 MD Eindhoven  
The Netherlands  
Phone: +31/40.758290  
Telefax: +31/40.75.82.99  
Telex: 35000 PHTC NL routing IND NLMTFAT

**SAUDI ARABIA**  
AL ALAMIAH ELECTRONICS  
P.O.Box 5954  
University Street  
Riyadh 11432  
Saudi Arabia  
Telex: 401530

**SOUTH AFRICA**  
MARANTZ  
DIVISION OF PHILIPS S.A.  
Main Road Martindale  
P.O. Box. 58088  
Newville 21114  
South Africa

**SPAIN**  
PHONO S.A.  
Ignacio Iglesias 10  
Badalona (Barcelona)  
Spain  
Telex: 59355

**SWEDEN**  
MARANTZ  
DIVISION OF PHILIPS  
Försäljning AB  
Tegeluddsvägen 1  
S-115 84 Stockholm  
Sweden  
Telex: 14060

**SWITZERLAND**  
MARANTZ  
Technischer Service  
Duenstrasse 3  
3186 Düringen  
Switzerland

**TURKEY**  
DOGRUOL Ltd.  
I.M.C.  
6 Blok N°6310  
Unkapani  
Istanbul  
Turkey  
Telex: 22085

**MALTA**  
CACHIA & GALEA  
Republic Street, 68D  
Valella  
Telex: 1682

**PORTUGAL**  
MARANTZ  
Divisao philips S.A. service  
Outeira-carnaxide  
2795 LinDA-A-VELHA  
Telex: 43906

## TECHNICAL SPECIFICATIONS (DIN)

### Power Amplifier Section

IHF Dynamic Power : 65W  
2 ohms : 60W  
4 ohms : 42W  
8 ohms

Power Output Per Channel : 38W  
DIN 8 ohms 1 kHz 1% THD : 40W  
FTC 4 ohms 40-20 kHz 0.06% THD : 35W  
FTC 8 ohms 40-20 kHz 0.03% THD

Total Harmonic Distortion at 8 ohms : 0.015%  
I.M. Distortion at 8 ohms : 0.015%  
Damping Factor : 100

### Phono Amplifier Section

MM Cartridge Input : ±0.5 dB  
Frequency Difference : 2.5 mV  
Input Sensitivity : 47k Ohms  
Input Impedance

### High Level Section

Frequency Response : 10-60 kHz  
Signal to Noise Ratio (A weighted) : 87 dB  
Input Sensitivity : 150 mV  
Input Impedance : 33k Ohms  
Tape Output Level [Phono (MM) 5 mV 1 kHz Input] : 300 mV  
Tape Output Impedance (Phono) : 220 Ohms  
Tone Control Action 100 Hz : ±6 dB  
10 kHz : ±6 dB

### General

Power Requirements : 220V/240V  
2 Voltage version : 110V-240V  
4 Voltage version

Power Consumption (Rated Power) : 135W  
AB Class Moode : —  
A Class Moode

Dimensions : 420 mm  
Panel Width : 118 mm  
Panel Height : 280 mm  
Depth

Weight : 10 kg  
Unit alone

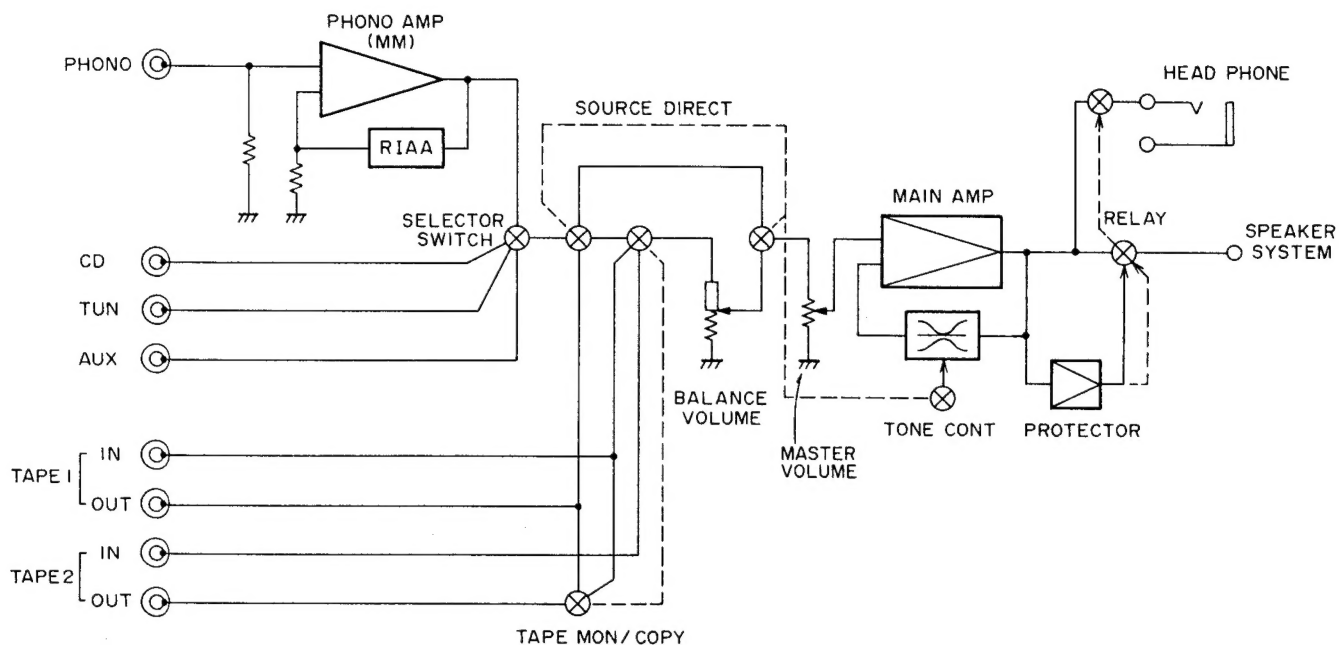
Specifications and appearance are subject to change for modification without notice.

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

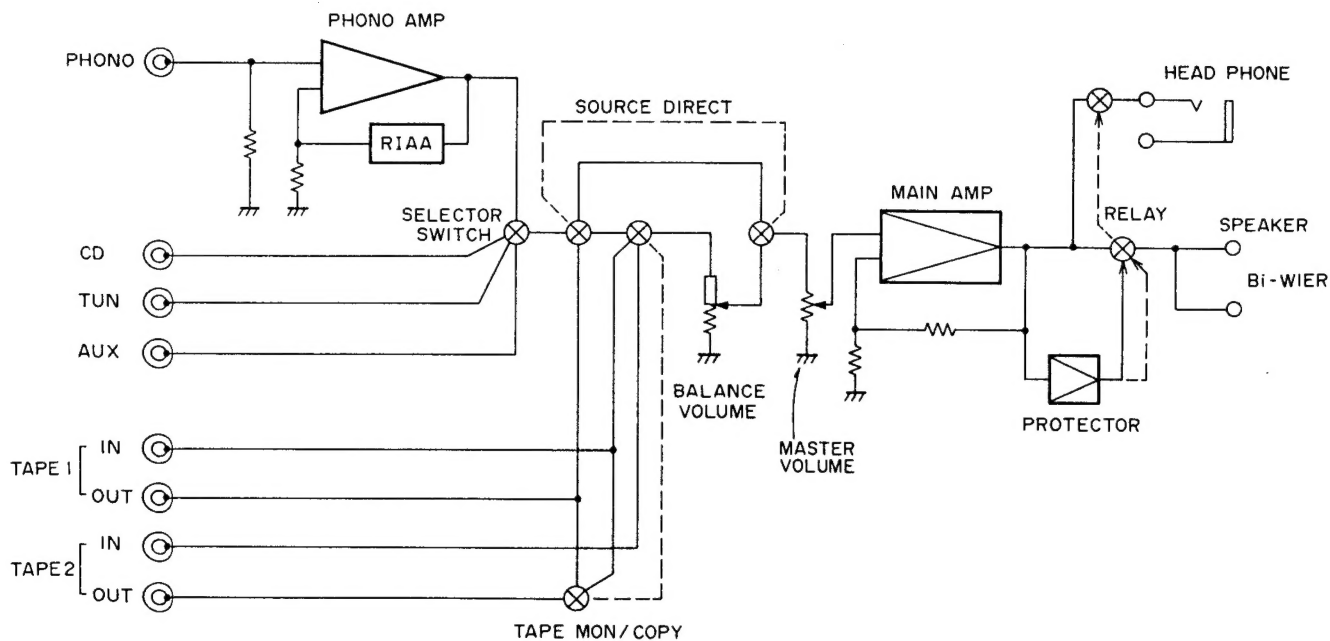
In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

# 1. BLOCK DIAGRAM

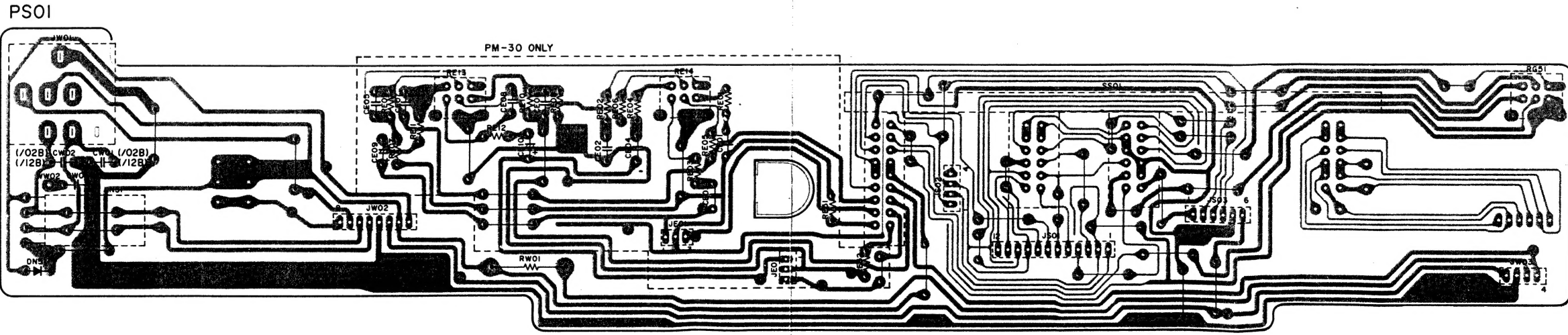
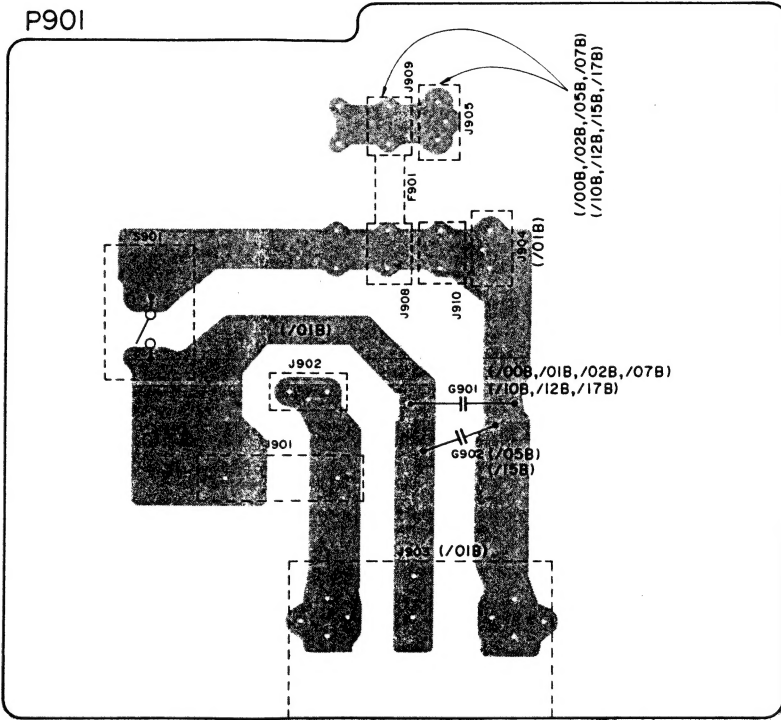
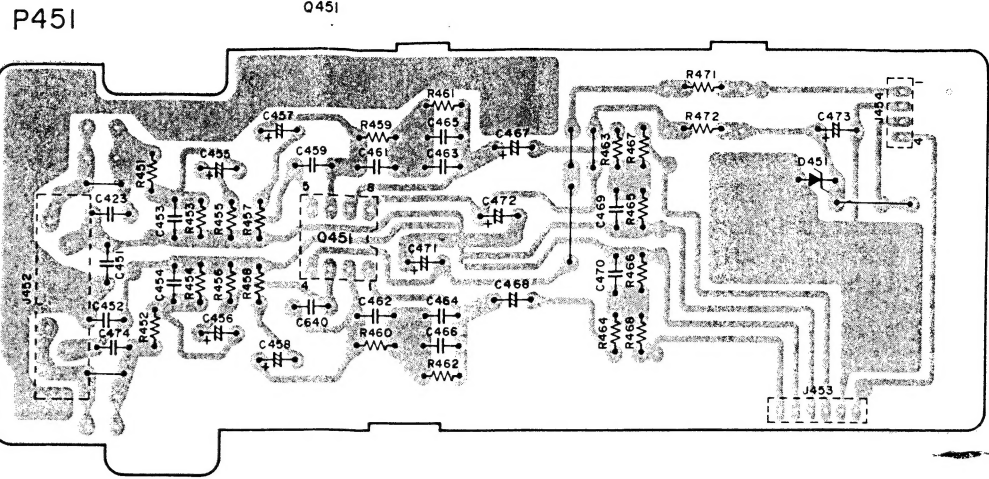
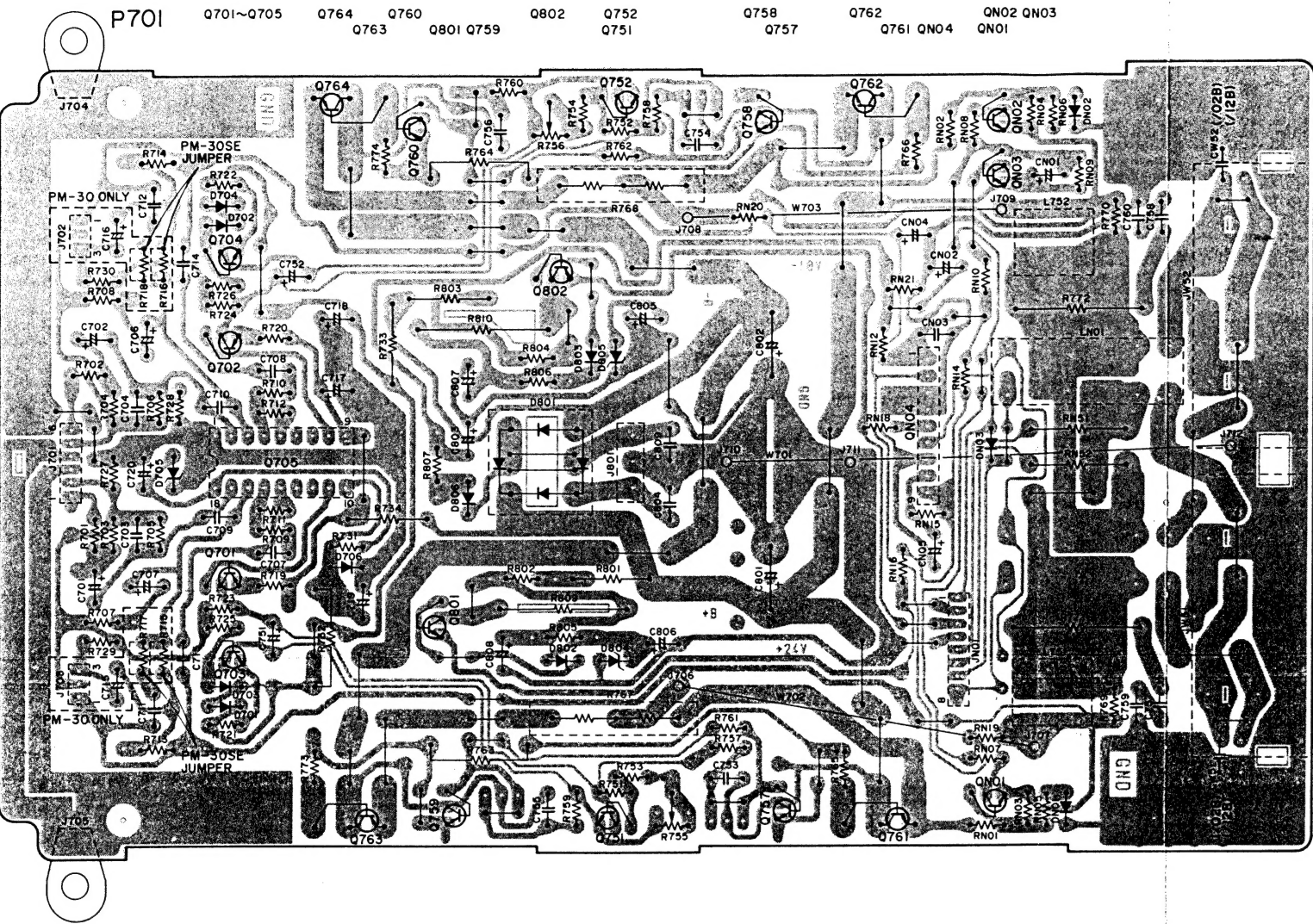
## PM-30



## PM-30SE

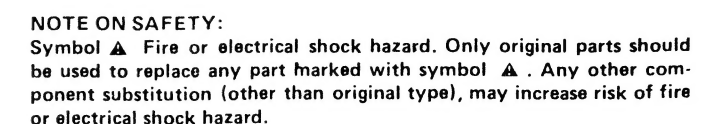


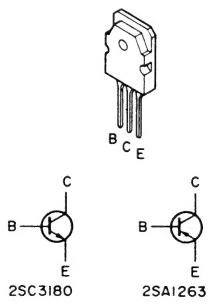
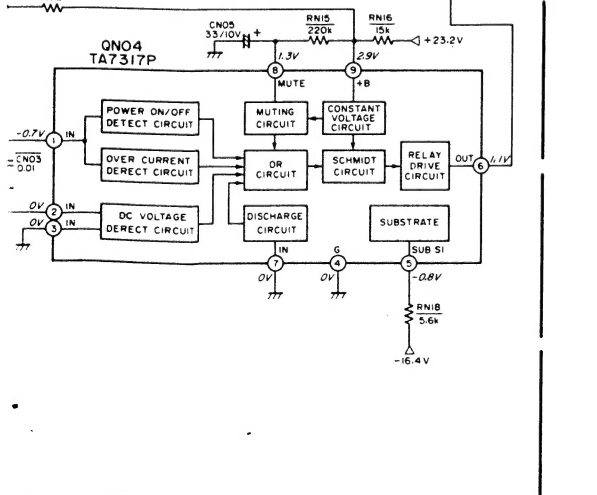
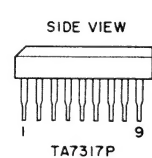
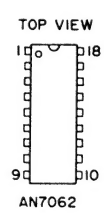
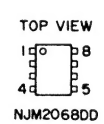
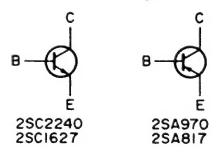
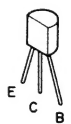
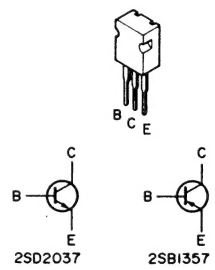
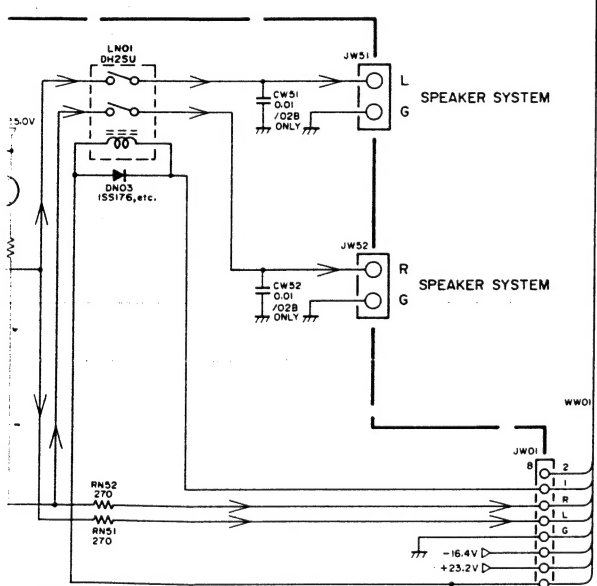
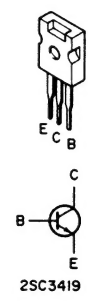
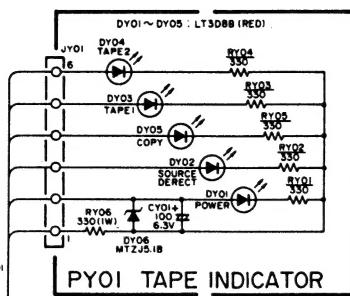
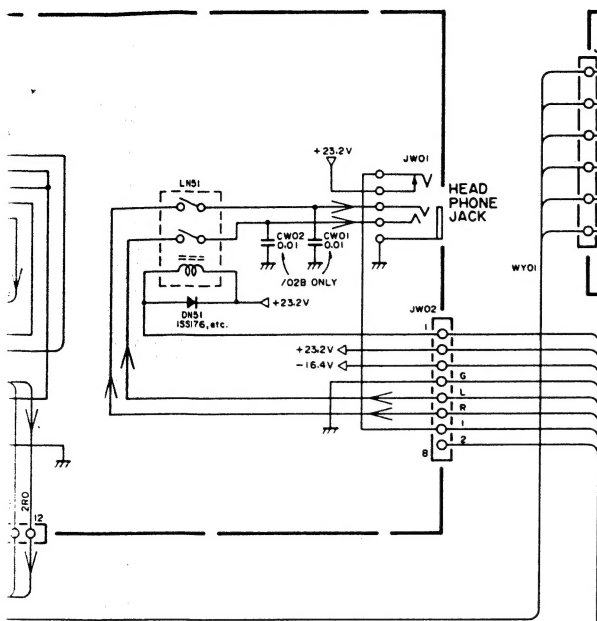
2. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)





P451 PHONO AMP

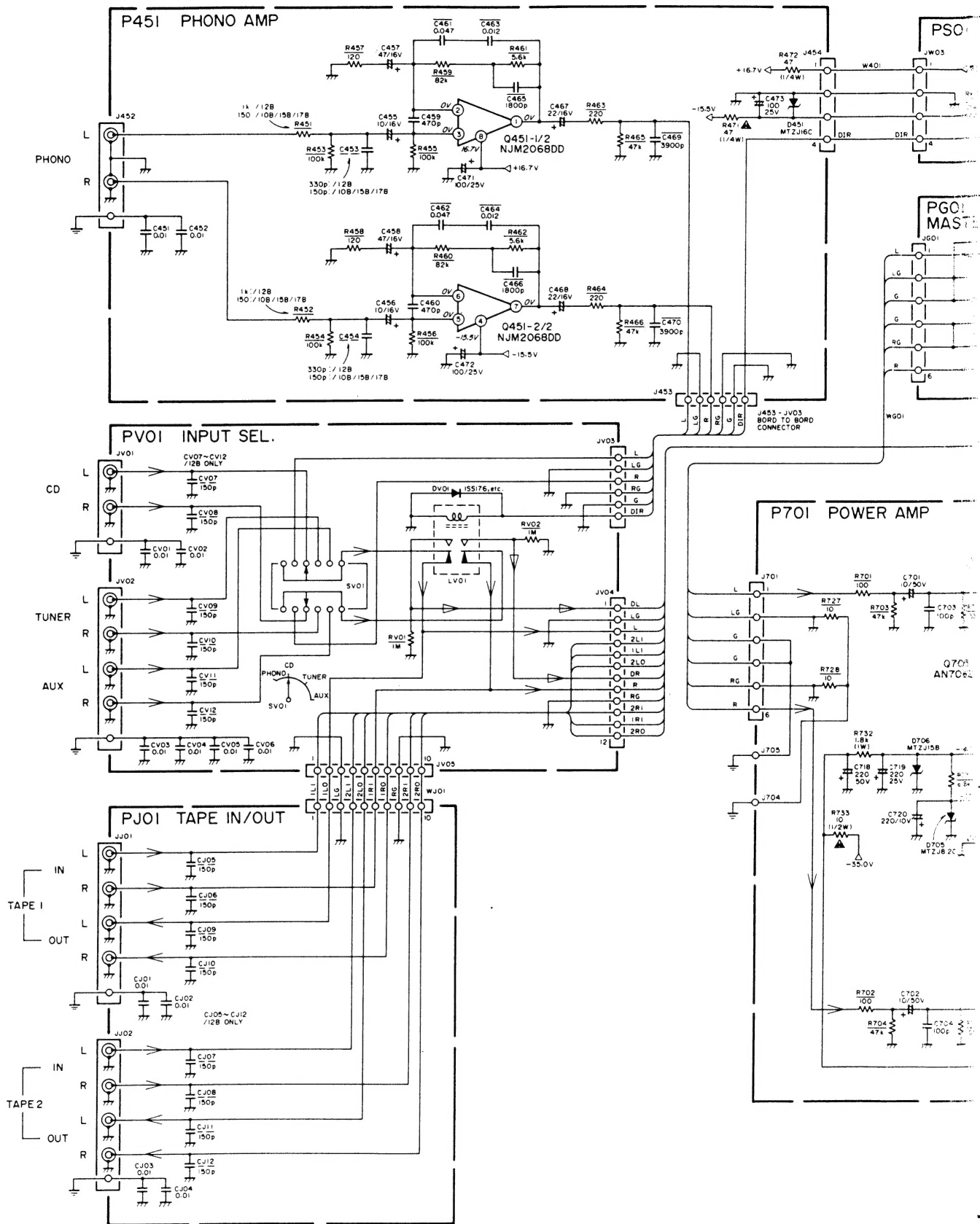


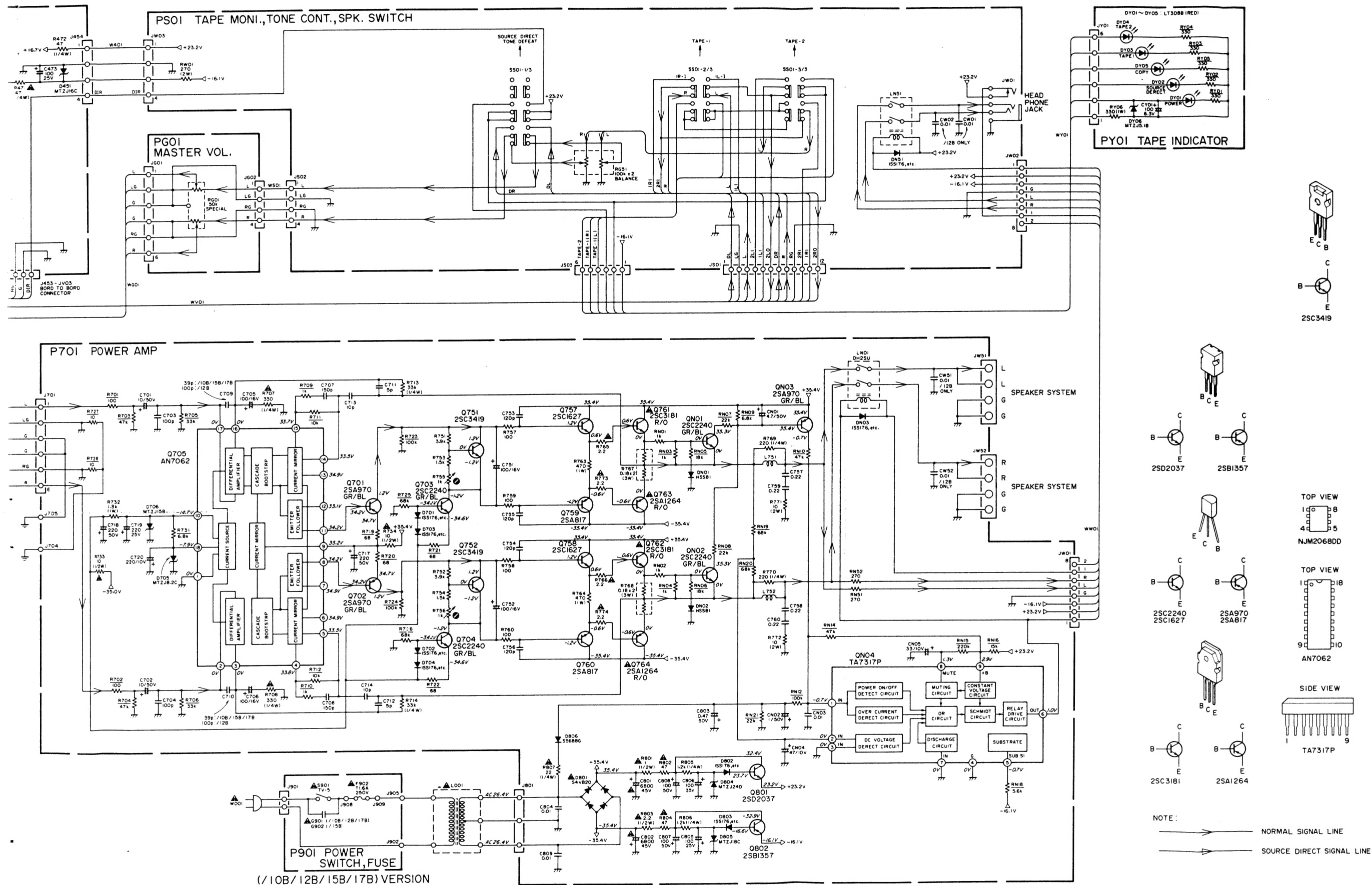


NOTE :  
 —————> NORMAL SIGNAL LINE  
 —————> SOURCE DIRECT SIGNAL LINE

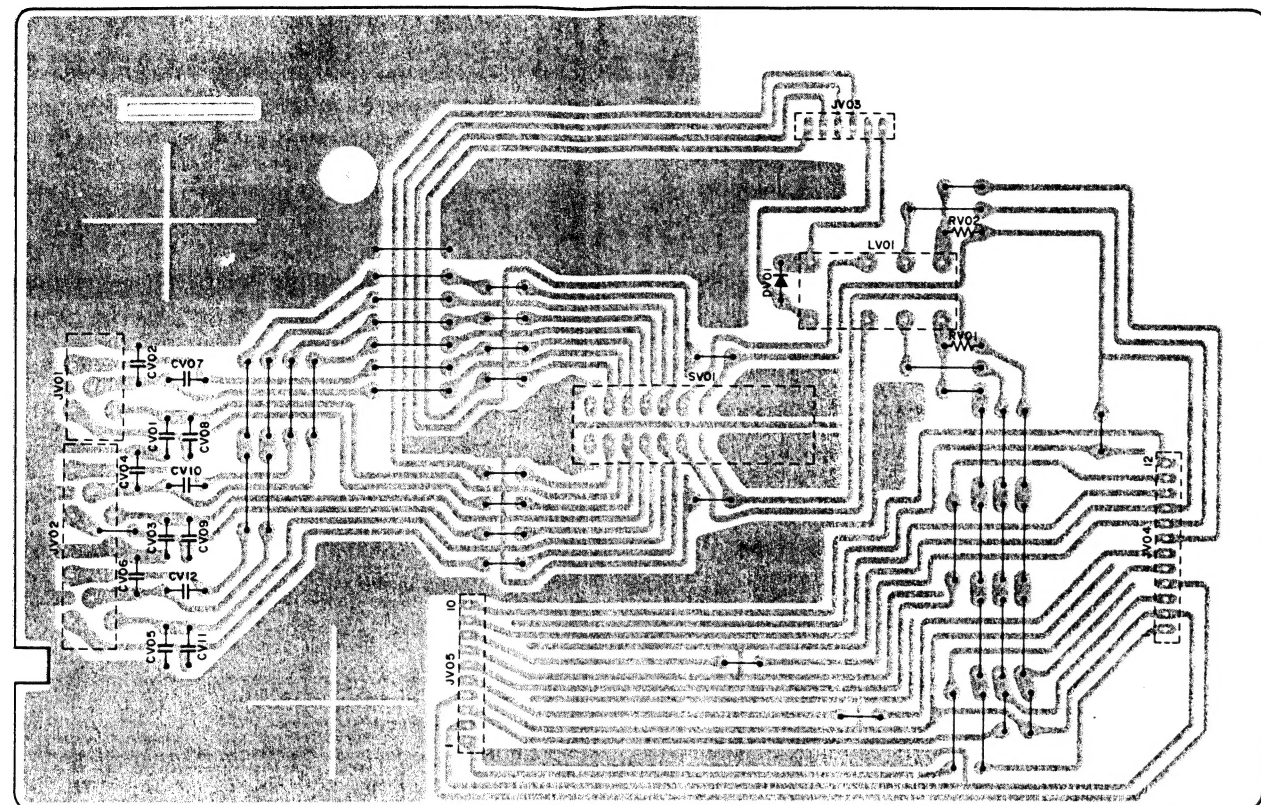
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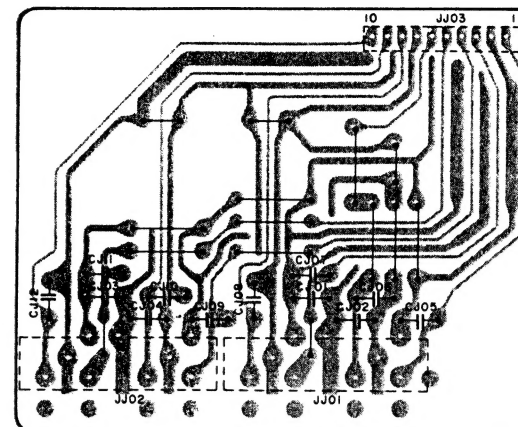




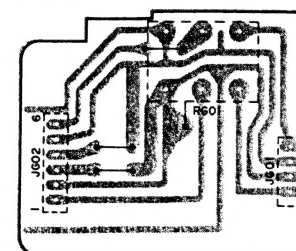
PV01



PJ01



PG01



PY01





## MZ 2617



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 425 40176	Front Panel Assembly /01B/02B/05B/07B
	4822 425 40179	Front Panel Assembly /10B/12B/15B/17B
003B	4822 459 10943	Badge
010B	4822 413 41544	Knob, Volume
011B	4822 413 41545	Knob, Selector
012B	4822 413 41589	Knob, Tone/Balance
	4822 413 31551	Knob, Tone/Balance /01B/02B/05B/07B
		Knob, Tone/Balance /10B/12B/15B/17B
013B	4822 410 60395	Button, Power
014B	4822 410 60343	Button, Speaker
002D	4822 501 11008	Screw
001F	4822 466 92914	Sheet, DENKA
005G	4822 462 41477	Leg
010G	4822 404 60628	Link, Power Switch
902G	4822 532 60948	Bushing, AC Cord /02B/07B/01B/10B/12B/17B
	4822 532 61184	Bushing, AC Cord /05B/15B
001P	4822 401 11351	Clamper, Phono Jack
▲ F001	4822 070 31002	Fuse, 1A 250V /01B
▲ F002	4822 253 30206	Fuse, 2A 250V /01B
▲ J001	4822 256 30233	Jack, Fuse Holder /01B
J031	4822 290 40297	Terminal, GND
▲ J091	4822 272 10227	Voltage Selector /01B
▲ J092	4822 265 10092	Jack, AC Adapter /01B
▲ L001	4822 146 21554	Power Transformer /02B/05B/07B/10B/12B/15B/17B
	4822 146 21567	Power Transformer /01B
S011	4822 273 10214	Rotary Switch, Selector
001T	4822 736 20695	User Manual /01B/02B/05B/07B
	4822 736 20715	User Manual /10B/12B/15B/17B

#### 4. IDLING CURRENT ADJUSTMENT

- Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Also set semi-fixed resistors R755 (L CH) and R756 (R CH) on PCB P701 to the center positions.
- Each of the cement resistors R767 (L CH) and R768 (R CH) on the PCB P701 is provided with three test points. Connect a digital voltmeter, set for the DC voltage input, to the test points at the two extremities of the three test points of R767 or R768.
- After the setup above, switch the power ON and adjust semi-fixed resistor R755 (L CH) or R756 (R CH) on PCB P701 according to the digital voltmeter reading. The target setting value is 15 mV (41.6 mA) for both the L CH and R CH.

Please refer to the table below.

Elapsed time after power ON	Idling current setting value
30 sec. - 1 min.	15 mV
1 min. - 2 min.	16 mV
2 min. - 4 min.	16.6 mV
More than 4 min.	15 mV

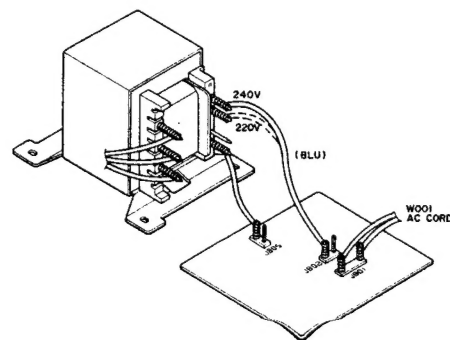
#### Note on Safety:

Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

#### 5. HOW TO CHANGE THE SUPPLY VOLTAGE (/02B/05B/07B/10B/12B/15B/17B Versions)

With the /05B/07B/15B/17B Versions, the rated supply voltage of 240V can be changed to 220V. In the same way, the 220V rated supply voltage of the /02B/10B/12B Versions can be changed to 240V.

Refer to the following diagram for the voltage change procedure.



#### 6. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
ACVTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO aignment
Circuit Tester	Trouble shooting
DCVTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer	Adjust level of primery power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

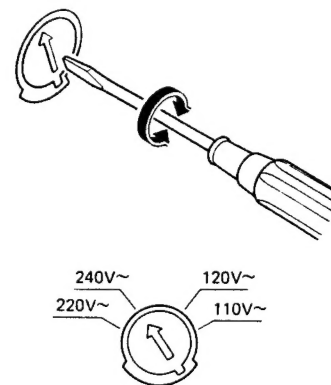
#### 7. VOLTAGE CONVERSION

##### • EUROPEAN MODEL ONLY

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

##### VOLTAGE SELECTOR

**CAUTION**  
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



8. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.  
RESISTOR  
R\*\*\*: (1) GD05 --- 140, Carbon film fixed resistor, ±5%, 1/4W  
R\*\*\*: (2) GD05 --- 160, Carbon film fixed resistor, ±5%, 1/6W  
① --- Resistance value

Examples  
① Resistance value  
0.1Ω...001 10Ω...100 1kΩ...102 100kΩ...104  
0.5Ω...005 18Ω...180 2.7kΩ...272 680kΩ...684  
1Ω...010 100Ω...101 10kΩ...103 1MΩ...105  
6.8Ω...068 390Ω...391 22kΩ...223 4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C\*\*\*: CERAMIC CAP.  
(1) DD1 --- 370, Ceramic condenser  
Disc type  
Temp. coeff. P350 ~ N1000, 50V  
①③  
Capacity value  
Tolerance

Examples  
① Tolerance (Capacity deviation)  
±0.25F...0  
±0.5pF...1  
±5%...5  
\* Tolerance of COMMON PARTS handled here are as follows:  
0.5pF ~ 5pF, ±0.25pF  
6pF ~ 10pF, ±0.5pF  
12pF ~ 560pF, ±5%  
② Capacity value  
0.5pF...005 3pF...030 100pF...101  
1pF...010 10pF...100 220pF...221  
1.5pF...015 47pF...470 560pF...561

C\*\*\*: CERAMIC CAP.  
(1) DK16 --- 300, High dielectric constant ceramic condenser  
Disc type  
Temp. chara. 2B4, 50V  
①  
Capacity value

Example  
② Capacity value  
100pF...101 1000pF...102 10000pF...103  
470pF...471 2200pF...222

C\*\*\*: ELECTROLY CAP. ( ⚡ ), FILM CAP. ( ⚡ )  
(1) EA --- 10, Electrolytic condenser  
One-way lead type, Tolerance ±20%  
①②  
Dielectric strength  
Capacity value

Examples  
① Capacity value  
0.1μF...104 4.7μF...475 100μF...107  
0.33μF...334 10μF...106 330μF...337  
1μF...105 22μF...226 1100μF...108  
2200μF...228  
② Working voltage  
6.3V...006 25V...025  
10V...010 35V...035  
16V...016 50V...050

(2) DF15 --- 350, Plastic film condenser  
One-way type, Mylar ±5% 50V  
①  
Capacity value

Examples  
① Capacity value  
0.001μF (1000pF)...102 0.1μF...104  
0.0018μF...182 0.56μF...564  
0.01μF...103 1μF...105  
0.015μF...153

REF. DESIG.	PART NO.	DESCRIPTION
		PG01-MASTER VOLUME CIRCUIT BOARD
RG01	4822 101 30653	Variable Resistor 50KΩ
		PJ01-TAPE IN/OUT CIRCUIT BOARD
CJ01 CJ04	4822 122 32486	Ceramic Cap. 0.01μF +80% -20%
JJ01 JJ02	4822 266 30284	Terminal, 4P RCA Terminal, 4P RCA
		PS01-TAPE/TONE/SPK. CIRCUIT BOARD
CE09	4822 124 90352	Elect Cap. 10μF 16V /01B/02B/05B/07B
CE10	4822 124 90352	Elect Cap. 10μF 16V /01B/02B/05B/07B
CW01	4822 122 32486	Ceramic 0.01μF +80% -20% /02B/12B
CW02	4822 122 32486	Ceramic 0.01μF +80% -20% /02B/12B
RE13	4822 100 30139	Variable Resistor 50KΩ(C) /01B/02B/05B/07B
RE14	4822 100 30139	Variable Resistor 50KΩ(C) /01B/02B/05B/07B
RG51	4822 100 30138	Variable Resistor 100KΩ(MN)
RW01	4822 116 60455	Metal Resistor 270Ω ±5% 2W
DN51	4822 130 33305	Diode 1SS176, etc.
JW01	4822 267 31227	Jack, Headphone /01B/02B/05B/07B
	4822 267 31229	Jack /10B/12B/15B/17B
LN51	4822 280 20196	Relay
SS01	4822 276 12956	Push Switch
		PV01-INPUT SELECTOR CIRCUIT BOARD
CV01 CV06	4822 122 32486	Ceramic Cap. 0.01μF +80% -20%
DV01	4822 130 33305	Diode 1SS176, etc.
JV01 JV02	4822 266 30282 4822 266 30284	Terminal, 2P RCA Terminal, 4P RCA
LV01	4822 280 20195	Relay, SZ-2104
SV01	4822 277 21412	Slide Switch, Selector

REF. DESIG.	PART NO.	DESCRIPTION
		PY01-TAPE INDICATOR CIRCUIT BOARD
CY01	4822 124 21737	Elect Cap. 100μF 6.3V
RY06	4822 111 50474	Resistor 330Ω ±5%
DY01 DY05 DY06	4822 130 80326 4822 130 80317	L.E.D. LT3D8B (RED) Zener Diode RD5.1JB2/MTZJ5.1B
		P451-PHONO AMP. CIRCUIT BOARD
C451 C452 C453	4822 122 32486 4822 122 32486 4822 126 11069	P451-CAPACITORS Ceramic 0.01μF +80% -20% Ceramic 0.01μF +80% -20% Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C454	4822 126 11069	Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C455 C456 C457 C458 C459 C460 C461	4822 124 90352 4822 124 90352 4822 124 41539 4822 124 41539 4822 126 11127 4822 126 11127 4822 121 42764	Elect 10μF 16V Elect 10μF 16V Elect 47μF 16V Elect 47μF 16V Ceramic 470pF ±10% /02B Ceramic 470pF ±10% /02B Film 0.047μF /10B/12B/15B/17B
C462	4822 121 42764	Film 0.047μF ±5% /10B/12B/15B/17B
C463	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C464	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C465	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C466	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C467 C468	4822 124 90358 4822 124 90358	Elect 22μF 16V Elect 22μF 16V
C469	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C470	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C471	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C472	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C473	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
		P451-RESISTORS
▲R471 R472	4822 111 90731 4822 111 30006	47Ω ±2% ¼W, Fuse 47Ω ±5% ¼W
		P451-SEMICONDUCTORS
D451	4822 130 80498	Zener RD16JB2/MTZJ16C
Q451	4822 209 73064	IC NJM2068DD
		P451-MISCELLANEOUS
J452	4822 265 20355	Terminal, 2P RCA
		P701-POWER AMP. CIRCUIT BOARD
		P701-CAPACITORS
CN01 CN02 CN04 CN05	4822 124 22274 4822 124 41543 4822 124 22275 4822 124 23417	Elect 4.7μF 50V Elect 1μF 50V Elect 47μF 10V Elect 33μF 10V
CW51	4822 122 32486	Ceramic 0.01μF +80% -20% /02B/12B
CW52	4822 122 32486	Ceramic 0.01μF +80% -20% /02B/12B
C701 C702 C703 C704 C705 C706 C707	4822 124 22571 4822 124 22571 4822 121 51517 4822 121 51517 4822 124 90354 4822 124 90354 4822 121 51037	Elect 10μF 50V Elect 10μF 50V Film 100pF ±5% Film 100pF ±5% Elect 100μF 16V Elect 100μF 16V Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C708	4822 121 51037	Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C709	4822 126 11068	Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C710		Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C711	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C712	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C713	4822 126 11125	Ceramic 10pF ±5% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
C714	4822 126 11125	Ceramic 10pF $\pm 5\%$ /01B/02B/05B/07B
	4822 121 43128	Film 10pF $\pm 10\%$ /10B/12B/15B/17B
C715	4822 124 90362	Elect 22 $\mu$ F 50V /01B/02B/05B/07B
C716	4822 124 90362	Elect 22 $\mu$ F 50V /01B/02B/05B/07B
C717	4822 124 90366	Elect 220 $\mu$ F 50V
C718	4822 124 90366	Elect 220 $\mu$ F 50V
C719	4822 124 41535	Elect 100 $\mu$ F 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220 $\mu$ F 25V /10B/12B/15B/17B
C720	4822 124 41535	Elect 100 $\mu$ F 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220 $\mu$ F 25V /10B/12B/15B/17B
C751	4822 124 90354	Elect 100 $\mu$ F 16V
C752	4822 124 90354	Elect 100 $\mu$ F 16V
C753 C756	4822 121 43126	Film 120pF $\pm 5\%$
▲ C801	4822 124 23458	Elect 4700 $\mu$ F 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800 $\mu$ F 45V /10B/12B/15B/17B
▲ C802	4822 124 23458	Elect 4700 $\mu$ F 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800 $\mu$ F 45V /10B/12B/15B/17B
C803	4822 124 22273	Elect 0.47 $\mu$ F 50V
C804	4822 122 32486	Ceramic 0.01 $\mu$ F +80% -20%
C805	4822 124 41535	Elect 100 $\mu$ F 25V
C806	4822 124 41536	Elect 100 $\mu$ F 35V
C807	4822 124 90355	Elect 100 $\mu$ F 50V
C808	4822 124 90355	Elect 100 $\mu$ F 50V
C809	4822 122 32486	Ceramic 0.01 $\mu$ F +80% -20%
<b>P701-RESISTORS</b>		
RN01	4822 111 91257	1K $\Omega$ $\pm 5\%$ 1/6W
RN02	4822 111 91257	1K $\Omega$ $\pm 5\%$ 1/6W
RN51	4822 116 60455	270 $\Omega$ $\pm 5\%$ 2W, Metal
RN52	4822 116 60455	270 $\Omega$ $\pm 5\%$ 2W, Metal
▲ R707	4822 116 82608	680 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse /02B/05B
	4822 116 81748	330 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse /12B/15B
▲ R708	4822 116 82608	680 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse /02B/05B
	4822 116 81748	330 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse /12B/15B
R713	4822 273 10214	33K $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W
R714	4822 273 10214	33K $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W

REF. DESIG.	PART NO.	DESCRIPTION
R732	4822 116 60343	1.8K $\Omega$ $\pm 5\%$ 1W
▲ R733	4822 116 60313	10 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W, Fusible
▲ R734	4822 116 60313	10 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W, Fusible
R755	4822 100 11373	4.7K $\Omega$ , Trimming
R756	4822 100 11373	4.7K $\Omega$ , Trimming
R757	4822 111 91285	100 $\Omega$ $\pm 5\%$ 1/6W
R758	4822 111 91285	100 $\Omega$ $\pm 5\%$ 1/6W
R759	4822 111 91285	100 $\Omega$ $\pm 5\%$ 1/6W
R760	4822 111 91285	100 $\Omega$ $\pm 5\%$ 1/6W
R763	4822 116 60267	470 $\Omega$ $\pm 5\%$ 1/6W
R764	4822 116 60267	470 $\Omega$ $\pm 5\%$ 1/6W
▲ R765	4822 111 91424	2.2 $\Omega$ $\pm 5\%$ 1/6W
▲ R766	4822 111 91424	2.2 $\Omega$ $\pm 5\%$ 1/6W
R767	4822 116 82049	0.18 $\Omega \times 2$ $\pm 10\%$ 3W
R768	4822 116 82049	0.18 $\Omega \times 2$ $\pm 10\%$ 3W
R769	4822 116 52849	220 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W
R770	4822 116 52849	220 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W
R771	4822 111 90726	10 $\Omega$ $\pm 5\%$ 2W
R772	4822 111 90726	10 $\Omega$ $\pm 5\%$ 2W
▲ R773	4822 111 91424	2.2 $\Omega$ $\pm 5\%$ 1/6W
▲ R774	4822 111 91424	2.2 $\Omega$ $\pm 5\%$ 1/6W
▲ R801	4822 116 60306	1 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W, Fusible
▲ R802	4822 111 90731	47 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse
▲ R803	4822 111 60308	2.2 $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W, Fusible
▲ R804	4822 111 90731	47 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse
R805	4822 111 91423	1.2K $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W
R806	4822 111 91423	1.2K $\Omega$ $\pm 5\%$ $\frac{1}{2}$ W
▲ R807	4822 113 90119	22 $\Omega$ $\pm 2\%$ $\frac{1}{2}$ W, Fuse
<b>P701-SEMICONDUCTORS</b>		
DN01	4822 130 80837	Diode HSSB1
DN02	4822 130 80837	Diode HSSB1
DN03	4822 130 33305	Diode 1SS176, etc.
D701	4822 130 33305	Diode 1SS176, etc.
D704		
D705	4822 130 80273	Zener RD8.2JB2/MTZJ8.2C
D706	4822 130 80322	Zener RD15JB1/MTZJ15B
▲ D801	4822 130 31007	Diode S4VB-20
D802	4822 130 33305	Diode 1SS176, etc.
D803	4822 130 33305	Diode 1SS176, etc.
D804	4822 130 80116	Zener RD24JB2/MTZJ24D
D805	4822 130 80498	Zener RD16JB2/MTZJ16C
▲ D806	4822 130 80839	Diode S5688G
QN01	4822 130 43233	Transistor 2SC2240(GR, BL)
QN02	4822 130 43233	Transistor 2SC2240(GR, BL)
QN03	4822 130 42951	Transistor 2SA970(GR, BL)
QN04	4822 290 83312	IC TA7317P
Q701	4822 130 42951	Transistor 2SA970(GR, BL)
Q702	4822 130 42951	Transistor 2SA970(GR, BL)
Q703	4822 130 43233	Transistor 2SC2240(GR, BL)
Q704	4822 130 43233	Transistor 2SC2240(GR, BL)
Q705	4822 209 83732	IC AN7062P
Q751	4822 130 60526	Transistor 2SD1508
Q752	4822 130 60526	Transistor 2SD1508
Q757	4822 130 60696	Transistor 2SC1627(O, Y)
Q758	4822 130 60696	Transistor 2SC1627(O, Y)
Q759	4822 130 69693	Transistor 2SA817(O, Y)

REF. DESIG.	PART NO.	DESCRIPTION
Q760	4822 130 60693	Transistor 2SA817(O, Y)
▲ Q761	4822 130 60697	Transistor 2SC3180N(R, O) /01B/02B/05B/07B
▲ Q761	4822 130 43305	Transistor 2SC3181(R, O) /10B/12B/15B/17B
▲ Q762	4822 130 60697	Transistor 2SC3180N(R, O) /01B/02B/05B/07B
▲ Q762	4822 130 43305	Transistor 2SC3181(R, O) /10B/12B/15B/17B
▲ Q763	4822 130 60694	Transistor 2SA1263N(R, O) /01B/02B/05B/07B
▲ Q763	4822 130 43018	Transistor 2SA1264(R, O) /10B/12B/15B/17B
▲ Q764	4822 130 60694	Transistor 2SA1263N(R, O) /01B/02B/05B/07B
▲ Q764	4822 130 43018	Transistor 2SA1264(R, O) /10B/12B/15B/17B
Q801	4822 130 61179	Transistor 2SD2037(E, F)
Q802	4822 130 61176	Transistor 2SB1357(E, F)
<b>P701-MISCELLANEOUS</b>		
JW51	4822 290 81363	Terminal, Speaker /01B/05B/07B
	4822 290 81373	Terminal, Speaker /02B
	4822 290 60837	Terminal, Speaker /10B/15B/17B
JW52	4822 290 60841	Terminal, Speaker /12B
	4822 290 81364	Terminal, Speaker /01B/05B/07B
	4822 290 81373	Terminal, Speaker /02B
	4822 290 60836	Terminal, Speaker /10B/15B/17B
	4822 290 60839	Terminal, Speaker /12B
LN01	4822 280 20197	Relay, DH2SU
L751	4822 157 51739	Coil, Speaker
L752	4822 157 51739	Coil, Speaker
<b>P901-POWER SWITCH CIRCUIT BOARD</b>		
▲ F902	4822 070 31002	Fuse 1A 250V /02B/05B/07B/10B/12B/15B/17B
▲ G901	4822 121 43732	Film Cap. 0.01 $\mu$ F $\pm 20\%$ /01B/02B/07B/10B/12B/17B
▲ G902	4822 122 33276	Ceramic Cap. 0.01 $\mu$ F $\pm 20\%$ /05B/15B
▲ J903	4822 264 30313	Jack, AC Outlet /01B
▲ S901	4822 276 11654	Push Switch, Power

**NOTE ON SAFETY:**  
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.